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Digital Finance and Profitability of Small and Medium Enterprises in Siaya County, Kenya

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Abstract

Small and medium-sized enterprises (SMEs) are vital in creating jobs and promoting economic development. They contribute to at least 30% of Kenya's gross domestic output. Despite their significance, these enterprises encounter formidable challenges such as funding constraints, limited access to modern technology, restricted market expansion, regulatory burdens, and poor resource management, all of which curtail their profitability and socioeconomic effects. These challenges lead to SMEs recording lower profitability levels that limit their societal effects. This study aimed to investigate the relationship between digital finance and profitability of small and medium enterprises. The study was supported by Diffusion of Innovation (DOI) Theory. The research adopted an exploratory research design. The study sampled 375 respondents from a population of 15,045 SMEs in Siaya County using systematic and stratified random sampling techniques. Data was analyzed using descriptive and inferential statistics. The results demonstrated significant relationships between digital finance and SME profitability. Specifically, hypotheses asserting no significant relationships between digital credit, digital savings, and profitability were all rejected (P-values < 0.05) with study findings suggesting a positive relationship. This study is significant as it provides empirical evidence that various aspects of digital finance, including digital credit and savings significantly enhance the profitability of SMEs in Siaya County. The findings can benefit SMEs by highlighting effective digital financial strategies, assisting the government in appreciating the need to promote digital financial inclusion and guiding policymakers in developing supportive regulations and initiatives geared at bolstering the profitability and economic growth of SMEs.

Keywords: *Digital finance, digital credit, digital savings, profitability, Small and Medium Enterprises*

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1. Introduction

Business enterprises such as small and medium enterprises (SMEs) are vital in driving innovation, addressing local demand for goods and services, and supplying key resources to their larger counterparts in various industries. The World Bank (2019) estimates that these enterprises account for at least 90% of all businesses worldwide and are responsible for not less than 50% of the total workforce worldwide. In developing countries like Kenya, these enterprises support approximately 40% of the national gross domestic product (GDP) in their

respective economies, a figure that is significantly higher when their informal counterparts are included (World Bank, 2019).

SMEs play a significant role in developed countries as well as accounting for over 90% of all business enterprises, creating 60-70% employment, and making up at least 55% of the GDP (World Trade Organization, 2016). For example, in the United States, SMEs represent more than 99% of all businesses and are responsible for nearly half of all private-sector jobs, generating about 44% of the nation's GDP (U.S. Small Business Administration [SBA], 2022). Similarly, SMEs play a vital role in India's industrial landscape, making up about 95% of total units and employing approximately 69% of the workforce, contributing around 30% of India's GDP (Finezza, 2020; Gupta, 2018). In the United Kingdom, SMEs comprise 99.9% of businesses and support around 60% of private-sector employment. Despite their significance, SMEs encounter substantial barriers in accessing financial resources with only about 17% of bank loans being issued to them (Bank of England, 2017; Lerong, 2018). According to the Government of Canada's Key Small Business Statistics for 2022, SMEs constitute over 98% of businesses, contributing at least 50% to the country's GDP and accounting for 68% of employment.

In Africa, SMEs are crucial for economic growth, making important contributions to GDP and the creation of jobs. Muiruri (2017) reported that SMEs contribute to 50% of Africa's GDP and account for 60% of employment throughout the continent. In Ghana, SMEs represent 92% of registered businesses and are responsible for around 85% of all jobs, making up 75% of the GDP before the oil boom (Amoah, 2018). SMEs make up more than 98% of businesses in South Africa, employing 50-60% of the workforce and contributing 39% to the GDP according to McKinsey in 2020. Tanzania's Chamber of Commerce, Industry, and Agriculture (TCCIA) acknowledges that at least 95% of businesses in the country are made up of small enterprises. These enterprises are responsible for at least 40% of employment and account for about a third of the national GDP highlighting the critical value of SMEs in promoting economic prosperity in Africa.

The Kenya National Bureau of Statistics (KNBS) (2021) posited that SMEs support at least 80% of the total workforce while contributing at least 30% to the GDP. A survey by the Kenya Banker's Association (KBA) in 2021 indicated that roughly 15 million people are employed by Micro, Small, and Medium Enterprises (MSMEs) industries, further exposing MSMEs as major employers in Kenya (KBA, 2021). The surveys further showed that despite their significance, SMEs in Kenya continue to grapple with several challenges in their pursuit of financial success. Specifically, the survey pointed out an acute shortage of financial credit due to strict collateral demands, complicated procedures and paperwork, and restricted credit access from the existing financial system (World Bank, 2021; KBA, 2021). Nearly half of SMEs cite collateral requirements as a significant barrier to financing, with only a small percentage successfully securing loans from banks for start-up capital (KBA, 2021).

Digital finance presents a promising avenue to alleviate these challenges and empower SMEs in Kenya. By leveraging technologies such as digital payment platforms, fintech solutions, and mobile banking, SMEs can access more flexible, cost-effective financial services (European Commission, 2018; Awinja & Fatoki, 2021). New advancements in digital finance not only simplify financial transactions and lower costs but also offer immediate access to financial information, improving transparency and decision-making for SMEs. Furthermore, the

utilization of digital financial services could expand financial inclusivity by reaching untapped segments, such as small and medium enterprises in distant regions (Carter, 2021; Ethui, 2018). As Kenya continues to invest in digital technologies and regulatory frameworks that support fintech innovation (Awinja & Fatoki, 2021), digital finance emerges as a transformative tool, enhancing the competitiveness and sustainability of SMEs in the country.

1.1 Problem Statement

Small and medium enterprises play a significant role in generating employment opportunities in the Kenyan economy. A study by the Kenya National Bureau of Statistics (2020) demonstrated that SMEs in Kenya account for about 80% of the private sector workforce. The World Bank (2021) indicated that these enterprises generate approximately 33.8% of Kenya's GDP. The above statistics serve to confirm that these businesses are vital in promoting economic prosperity amidst global economic challenges.

Despite their significance, many new formal enterprises in Kenya demonstrate limited dynamism in expanding operations and adopting advanced technologies (Cruz & Zenaida, 2022). For instance, a survey study performed in Kenya highlighted that around 75% of SMEs do not live beyond the first three years in business (CBK, 2020). According to the findings from the KNBS Economic Survey 2019, approximately 2.2 million SMEs closed within their first year of operation over five years preceding the report, leading to the loss of approximately 3.1 million jobs (Kenya National Bureau of Statistics, 2019). The Ministry of Industrialization, Trade and Enterprise Development, (2020) through a sessional paper no. 5 of 2020 noted that 98% of the MSEs are made of Micro Enterprises while medium enterprises only account for 0.2% thus creating the "missing middle" scenario. According to the paper, this is due to several constraints that limit the capability of these enterprises to graduate from micro to small, and small to medium business units. This high mortality rate highlights the challenges hindering SMEs from realizing their full potential (Ombongi & Long, 2018). Key barriers include limited access to finance, inadequate technological infrastructure, and constrained market opportunities (World Bank, 2022). Kenyan firms have decried significant challenges when trying to access finance with 18% noting this challenge as the primary constraint affecting their growth (World Bank, 2020). KIPPRA (2020) found out that many SMEs lack the needed collateral and proper financial records that is required for bank financing.

In Siaya County, MSMEs were noted to have very limited access to digital finance which further constrained their financial performance (KIPPRA, 2020). A study in India by the Fintech Research Group (2020) concluded that digital finance improves efficiency, enhances financial management, and increases credit access among SMEs thus improving profitability. However, the study was noted to have limited generalizability due to its regional and sector-specific focus, lack of longitudinal data that can speak to long-term effects, and insufficient examination of the barriers such as cultural and institutional differences that hinder adoption of digital financial services among SMEs (Fintech Research Group, 2020).

Mwangi and Muturi (2021) researched the relationship between the application of mobile money and the financial performance of SMEs in Nairobi County. The duo concluded that mobile money platforms allowed speedy processing times, easier liquidity management, and increased sales turnover. This study was criticized for having a much narrower focus on SMEs in urban centers with different experiences from their rural counterparts. Research by Mwangi, Njiraini, and Waweru (2023) examined the association between digital lending platforms and

SMEs profitability and revealed potential benefits such as a quicker loan appraisal process, easier application process, and widened market reach. Mwangi, Njiraini, & Waweru, (2023)'s study has been criticized for ignoring the risks associated with digital credit such as exorbitant interest charges and potential debt cycling by SMEs.

Various literature on digital finance and financial performance of SMEs has faced scrutiny from academia and other scholars for focussing on specific aspects of digital financial services such as digital credit, digital payments, and mobile banking while ignoring the broader implications on the growth of SMEs as well as associated costs. The slow pace of adoption of digital finance, limited access to market opportunities, and unsupportive regulatory environment were enumerated by Ombongi and Long (2018) as contributing factors to SMEs' financial woes. Ochieng and Njoka (2023) noted that technology assist SMEs in reducing costs and improving operational efficiency. However, the specific effects of digital financial solutions on SME profitability have not been thoroughly explored. Existing literature lacks localized studies that comprehensively address the different facets of digital finance, such as digital credit, savings, payments, financial literacy, and platform ecosystems such as Jumia or Facebook, that are important in comprehending the holistic effects of digital finance on SMEs.

Siaya County contributes 1.2% to Kenya's GDP, driven by key sectors such as agriculture, manufacturing, Jua Kali, and retail, among others (Gross County Product Report, 2021). Despite hosting 15,045 registered SMEs, the county faces challenges typical of other SMEs nationwide, including limited financing options, skills gaps in management, and constrained market access (County Government of Siaya, 2023; Auma, 2015). These factors highlight Siaya County as an ideal study context. Understanding the specific dynamics and challenges within Siaya's SME sector is crucial for developing targeted policies that can enhance digital financial inclusion and overall economic resilience. Stakeholders in Siaya need to empower SMEs in the county by laying emphasis on digital finance as the bedrock for improving the county's contribution to the national GDP and economic growth. This study sought to demonstrate the relationship between digital finance and profitability of small and medium enterprises in the county of Siaya, Kenya.

1.2 Specific Objectives

i. To determine the relationship between digital credit and financial performance of SMEs in Siaya County.

ii. To determine the relationship between digital savings and financial performance of SMEs in Siaya County.

1.3 Research Hypotheses

H_{01}: There is no significant relationship between digital credit and the profitability of SMEs in Siaya County, Kenya.

H_{02}: There is no significant relationship between digital savings and the profitability of SMEs in Siaya County, Kenya.

2. Literature Review

2.1 Theoretical Review

Rogers (1962) developed Diffusion of Innovation (DOI) Theory that describes how ideas quickly spread within social networks or communities. Rogers (2003) states that aspects affecting the spread of a new idea involve social context, timing, communications and innovation. The hypothesis holds that individuals who adopt an innovation earlier than the rest have distinguishing attributes that set them apart from those who embrace the very innovation at later stages. Qualities of a population affects their reception or rejection of an advancement and as such, it is imperative that promoters of an innovation consider the characteristics of the target population.

The main notion of DOI is that for an idea, behaviour, or product to diffuse, consumers must perceive it as new or creative. In a social system, some consumers are more likely than others to accept an innovation. Adopters are categorised into: laggards, early adopters, late majority, and early majority (Lamorte, 2019). Usually, the early adopters are found within the middle segments of the population making understanding population characteristics critical. Various methods are utilized to alert the variety of adopter categories about the presence of a new technology. Consumers typically evaluate observability, testability, compatibility, and relative advantage before consuming a new technology (Lamorte, 2019).

Trendsetters, according to Chung and Kwon (2009), tend to be those who try new things first. They think creatively and are audacious. They are often the first to think of original ideas and will not bow to difficulties encountered. Liang and Lu (2010) define early adopters as individuals who communicate with original innovators but hesitant to embrace chances for change and wary of positions of authority. Those who embrace innovation early see change as a continual process and are energized by imaginative ideas. The early majority adopt an innovation before the average members of a social system. Rarely do they take the lead in the group, but they are eager to adapt to new ideas (Rodgers, 1971). Systems intended for this population contain instructional guides and informational documents regarding implementation procedures. Usually, they need proof that the innovation is effective before they are open to embracing it. Examples of people overcoming similar issues and proof that the development is enough are used as engagement strategies with this community.

Critics argue that DOI oversimplifies the complexity of human behaviour and fails to adequately account for cultural and social factors that influence adoption rates. Some scholars contend that the emphasis in the theory is mostly on innovation rather than the wider context of adoption decisions, like economic constraints or political influences. Others criticize DOI for its static portrayal of adopter categories, suggesting that it doesn't adequately capture the dynamic nature of individuals moving between categories over time.

The study on digital finance and profitability of SMEs in Kenya can be illuminated using the lens of the Diffusion of Innovations theory. Understanding how SMEs in Kenya adopt digital financial services can provide insights into their profitability. According to DOI, the adoption process depends on factors like perceived relative advantage, compatibility with existing practices, and trialability of the innovation. For SMEs in Siaya, these factors could affect their decision to adopt digital financial provisions, potentially affecting their operational efficiency, cost management, and overall profitability. Moreover, the theory suggests that early adopters and influencers within a community play crucial roles in encouraging adoption among their

peers, which could be vital in understanding how digital finance initiatives spread among SMEs in Kenya and their subsequent financial performance. Therefore, DOI supports the study's exploration of digital finance adoption as an independent variable influencing SME profitability in Kenya.

2.2 Empirical Review

2.2.1 Digital Credit and Profitability of Small and Medium-Sized Enterprises

Ngulale and Jagongo (2020) conducted a study to investigate how borrowing digital credit affects the financial risk of Micro and Small Enterprises (MSEs) in Nairobi County, Kenya. Out of 21,100 SMEs, 385 respondents revealed that digital credit is appealing due to its speed and convenience. However, the study also highlighted the product as capable of being harmful, causing over-indebtedness, loan defaults, and blacklisting by credit reference bureaus (CRB). Significant factors influencing financial risk included borrowing costs, credit risk management, design and delivery of digital loans, and financial literacy levels. However, the study's focus on Nairobi limits generalizability and its cross-sectional data may not capture long-term effects. It also lacks detailed mitigation strategies for SMEs for the risks identified.

Wathome (2020) examined digital credit's effect on young people's financial system access in Kangemi, Nairobi. The study found digital credit is beneficial for employment, poverty reduction, and financial independence. However, it also led to a cycle of indebtedness due to reckless borrowing. Wathome vouched for digital financial literacy and moderate regulations but provided no specific policy frameworks for achieving the same. The study's focus on Kangemi may not reflect the experiences of youth in other areas, and it lacks a comprehensive economic effect analysis.

Kaffenberger and Totolo (2018) performed research on the digital credit revolution in Tanzania and Kenya, finding that mobile phone usage is significantly important for the uptake of digital credit, with 35% of Kenyan and 21% of Tanzanian mobile phone users using digital credit. They noted weak regulatory structures, raising doubts about digital credit's potential for credible financial inclusion. They recommended tailoring services to target markets, establishing credit history pathways, and enhancing transparency and consumer protection. However, the study did not explore the reasons behind differing uptake rates between Kenya and Tanzania, propose concrete regulatory measures, or examine the effectiveness of existing consumer protection guidelines. It also failed to investigate the behavioural aspects driving multiple borrowing and debt cycling.

2.2.2 Digital Savings and Profitability of Small and Medium-Sized Enterprises

Skogqvist (2019) examined how mobile money affects the saving behaviour of financially excluded people, and found that using mobile money leads to increased savings. The evolution of M-PESA into a fully-fledged digital financial service paved the way for M-Shwari, enabling access to micro-savings and micro-credit. In Ghana, MTN and Fidelity Bank's 'MTN Y'ello Save' enable users to make interest-bearing savings alongside other services. However, the study does not address regional differences and the varied effect on SMEs' profitability.

Suri and Jack (2016), in their study on M-PESA in Kenya, identified that mobile money improves savings behaviours and financial resilience, especially in women-led households. They demonstrated that women could generate savings, facilitating their transition from

agriculture to business. Despite this, the study focuses on household effects and lacks analysis of broader SME profitability aspects.

Bashir (2017) examined the effect of fiscal products on SMEs' financial success in Nairobi County, finding that micro-savings significantly and positively influenced profitability. Bashir recommended adopting internet savings products like deposits, credit, and insurance for SMEs. However, the study is region-specific to Nairobi and may not reflect the experiences of SMEs in other areas like Siaya County. It also doesn't explore long-term sustainability and growth.

Ouma et al. (2017) researched the association between mobile money usage and savings behaviour in Kenya, Zambia, Uganda, and Malawi. They found that mobile money users are more likely to save due to the convenience and reduced transaction costs of mobile phones. The study highlights mobile money's role in boosting savings among the underprivileged and low-income groups but does not provide a detailed analysis of its effect on SME profitability or long-term financial health.

3. Methodology

The research adopted an exploratory research design. The study sampled 375 respondents from a population of 15,045 SMEs in Siaya County using systematic and stratified random sampling techniques. The study covered the period between 2018-2022. A semi-structured self-administered questionnaire was used in data collection by dropping at respondents' premises and collecting once they have filled. SPSS version 23 enabled the data analysis. Descriptive statistics including mean and standard deviation were used to describe characteristics of the study variables. Further, correlation and regression analysis were used to determine the relationship between independent variables and dependent variable.

4. Results and Discussion

4.1 Descriptive Statistics

The results in Table 1 show the descriptive statistics.

Table 1: Descriptive Statistics (Values are in Ksh)

	N	Minimum	Maximum	Mean	Std. Deviation
Digital credit	263	68,938.80	1,198,422.0	603,243.30	331,883.62
Digital savings	263	118,073.20	1,709,888.30	880,616.41	478,811.33
Profitability	263	100,609.30	926,488.30	503,297.00	240,046.40

The results show descriptive statistics for the SMEs for a period of 5 years (2018-2022). The minimum digital credit was Ksh 68,938.80 while the maximum was Ksh 1,198,422.0. The mean digital credit amount for SMEs was Ksh 603,243.30 indicating a central tendency around which the data fluctuated. However, the relatively high standard deviation of Ksh 331,883.62 suggests significant variability in digital credit amounts, highlighting that many SMEs received amounts both above and below the mean. The wide range between the minimum and maximum values suggests that there is a wide gap between the different categories of digital credit adopters.

The analysis revealed that digital savings among SMEs ranged widely from 2018 to 2022, with values spanning from Ksh 118,073.20 to Ksh 1,709,888.30. The mean was Ksh. 880,616.41

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while standard deviation was Ksh 478,811.33 indicating significant variation around the mean. This variability was also notable through the diverse range of amounts digitally saved across various small and medium enterprises echoing the differences in savings behaviour amongst SMEs in Siaya.

The data indicated significant variability in profitability among SMEs from 2018 to 2022. During this period, profits ranged from Ksh. 100,609.30 to Ksh. 926,488.30. The mean profitability was calculated at Ksh. 503,297.00 which was the central tendency of the data gathered. The standard deviation of Kh, 249,046.40 suggests a visible dispersion around this mean which indicates that SMEs in Siaya County significantly differ in their profitability.

4.2 Correlation Analysis

The study used Pearson Correlation to examine how digital finance relates to SME profitability in Siaya County, Kenya.

Table 2: Correlation Results

		Profitability	Digital credit	Digital savings
Profitability	r	1		
	p			
Digital Credit	r	.274**	1	
	p	.000		
Digital Savings	r	.281**	.141*	1
	p	.0000	0.022	

Table Note. ***p < 0.01; *p < 0.05*

The findings in Table 2 showed a strong and significant connection (r = 0.274, p = 0.000) between digital credit and profitability of SMEs. This confirms that an increase in the amount of digital credit utilized is likely to cause an increase in the dependent variable. This finding agrees with Kaffenberger and Totolo (2018) who posited that digital credit has a significant effect on financial inclusion.

The results also showed a strong and favourable connection (r = 0.281, p = 0.000) between small and medium enterprise profits and digital savings. This demonstrates that if digital savings increase, small and medium enterprises will experience higher net profits. The findings of the study echoed Skogqvist's (2019) results that utilizing mobile money is beneficial to individuals who are excluded from the financial system.

4.3 Regression Analysis

Regression analysis was instrumental in showing the relationship between the study variables.

Table 3: Regression of Coefficient

	Unstandardized Coefficients		**Standardized Coefficients**	**t**	**Sig.**
	B	**Std. Error**	**Beta**		
(Constant)	1.093	0.408		2.681	0.008
Digital credit	0.130	0.023	0.290	5.667	0.000
Digital savings	0.234	0.042	0.284	5.58	0.000

The results of this study suggested that digital credit positively and significantly affected the profitability of small and medium enterprises (β=0.290, p=0.000). This means that if the digital credit amount increases, small and medium enterprises (SMEs) will see a profit increase of 0.290 units. The findings support Kaffenberger and Totolo (2018) who found that digital credit positively influences financial inclusion.

The findings demonstrated that the relationship between digital savings and profitability of SMEs was positive and significant (β=0.284, p=0.000) suggesting that a unit increase in digital savings increases profitability by 0.284 units. The findings are in line with Omondi and Jagongo (2018) who demonstrated that financial performance of SMEs is positively connected to their savings behaviour.

The first hypothesis alleging no significant relationship between digital credit and profitability of SMEs in Siaya County was rejected due to the p-value of 0.000 which points to a significant association between the study variables. The result of this study is echoed by the findings of Ngulale and Jagongo (2020) who demonstrated a positive relationship between digital credit and financial stability and growth opportunities for SMEs.

Hypothesis two stated that there is no significant connection between digital savings and the profitability of small and medium enterprises. This hypothesis was declined due to a p-value of 0.000 confirming that digital savings indeed affects the dependent variable. The results match the findings by Skogqvist (2019) who found that digital savings among financially excluded populations is promoted by the widespread adoption of mobile money services. The ability of SMEs to make savings digitally allows them to enhance liquidity, invest in growth opportunities, and improve overall business performance.

5. Conclusion

The study concluded that digital credit impacts the profitability of SMEs positively and significantly. This is due to the convenience and rapid disbursement speed of digital credit thus making it highly appealing to SMEs.

The research found that digital savings positively impacts the profitability of SMEs by allowing SMEs to save small amounts of money with possibility of obtaining small loans. Financially literate SMEs are more able to practice proper financial management, invest wisely, mobilize savings, and incorporate latest financial technology in their operations.

6. Recommendations

This research recommends that the adoption of digital credit and digital savings be intensified by SMEs in their operations. This will enhance their profit levels by streamlining their financial transactions, and financial management practices in addition to widening their market reach. Leveraging digital credit to address short-term financial needs also boosts their flexibility and growth due to quicker and more convenient disbursement speed of this product.

Policymakers can support SMEs through digital finance by investing in training SMEs on digital financial products and improving access to these products. This will assist SMEs to effectively adopt these products thus enhancing the quality of their financial management practices and investment decisions. This can be achieved through targeted training programmes, putting in place supportive regulatory frameworks, developing nationwide ICT infrastructure such as reliable internet supply, and providing incentives to digital finance

players. Policymakers should also encourage collaborative engagements between government, private players, and educational institutions to improve digital skills among SMEs.

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